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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,511	10/28/2003	John C. McCarthy	D-2003-0004	5433

7590 05/27/2005  
Robert K. Tandler  
65 Atlantic Avenue  
Boston, MA 02110

EXAMINER

MENEFEE, JAMES A

ART UNIT PAPER NUMBER

2828

DATE MAILED: 05/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

87

<b>Office Action Summary</b>	Application No. 10/695,511	Applicant(s) MCCARTHY ET AL.	
	Examiner James A. Menefee	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 March 2005.  
 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☒ Claim(s) 1-10 is/are allowed.  
 6) ☒ Claim(s) 11-18 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

In response to the amendment filed 3/9/2005, the specification and claims 8-10 are amended. Claims 1-18 are pending.

### ***Terminal Disclaimer***

The terminal disclaimer filed on 3/9/2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application Number 10/424,300 has been reviewed and is accepted. The terminal disclaimer has been recorded, and the prior double patenting rejection withdrawn. Note that 10/424,300 has now been issued as US 6,898,218.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Komine (US 5,400,173).

Regarding claim 11, Komine discloses in Figs. 1 and 4 a method in a laser system that includes a pump laser 11 and an OPO 12, comprising steps of providing the OPO in the form of a ring laser having a segment including a nonlinear crystal 18 having an optical axis, and injecting

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a beam of monochromatic light (because pump source 11, being Nd:YLF/YAG, will be monochromatic) from the pump laser along a path aligned with the optical axis of the nonlinear crystal. While not specifically recited as “for eliminating feedback,” Komine’s system will necessarily eliminate feedback due to its ring configuration.

Regarding claim 12, the ring laser comprises mirrors 17,19,20 which are at an angle to the optical axis of the nonlinear crystal 18, whereby light traveling around the ring is reflected in a direction away from the pump laser, thus eliminating feedback.

Regarding claim 13, as seen in Fig. 4 the angle must be 45°.

Regarding claim 14, the ring laser generates a signal (wave 1, col. 6 line 44), the mirrors include an input mirror (upper 17 in Fig. 4) on one side and an output mirror 19 to the other side of the nonlinear crystal, wherein the input mirror is reflective of the signal. Col. 7 lines 32-33.

Regarding claim 15, the input mirror is transmissive of the pump laser (wave 0, col. 6 line 43, col. 7 line 38-39), the ring laser generates an idler (wave 2, col. 6 line 44), the output mirror being transmissive of the pump and idler and reflective of the signal. Col. 7 lines 32-40.

Regarding claims 16-18, the limitations are disclosed as noted above. No isolators are needed to prevent feedback due to the ring configuration. While Komine does not disclose that this is “for minimizing weight and size of a LIDAR unit,” this preamble limitation only denotes the intended use of the device and is not given patentable weight.

#### ***Allowable Subject Matter***

Claims 1-10 are allowed. The following is a statement of reasons for the indication of allowable subject matter:

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There is not taught or disclosed in the prior art an apparatus comprising a pump laser defining a single beam line, a ring OPO, and an OPA receiving the OPO output, where the OPO and OPA each have a nonlinear crystal aligned along said single beam line. See also the response to arguments below.

### *Response to Arguments*

Applicant's arguments filed 3/9/2005 have been fully considered but are not wholly persuasive.

The objections to the specification and claim 10, and the 35 U.S.C. 112 rejections of claim 8-10 are withdrawn in light of the amendments. The terminal disclaimer has obviated the double patenting rejection.

Claims 11-18 were rejected under 35 U.S.C. 102, and claims 1-10 under 35 U.S.C. 103. Each rejection was based on the Komine reference. Applicant argued generally regarding the Komine reference, the arguments being that Komine does not show a combination of an OPO and an OPA, and that Komine does not show an in-line system from beginning to end.

The arguments are generally persuasive as to the rejection of claims 1-10, with the following additional comments:

As to the first argument, the examiner agrees that Komine does not disclose a combination of an OPO and an OPA. Komine clearly discloses only two OPOs. However, applicant did not respond to the examiner's concerns that an OPO is merely an OPA that is included in a cavity, therefore Komine's second OPO necessarily includes an OPA. The examiner has dropped this point due to the differences between an OPO and OPA; it is not

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believed that the OPO of Komine can be reasonably interpreted to meet the OPA as claimed, nor is there a suggestion for changing Komine's OPO into an OPA. Note that in indicating the allowability of these claims above, the examiner does not consider applicant's invention to include merely two OPOs in series as described in Komine, only an OPO and an OPA in series as required in the claim.

As to the second argument, applicant has made no reply to the examiner's assertion that it would have been obvious to make Komine's system inline by making an obvious rearrangement of parts that would not materially affect the operation of the system; applicant has only stated that this is not the case in Komine. Since applicant has made no argument as to the merits of this finding, the argument is not persuasive. However, the point is moot as the rejection has been withdrawn due to the first argument as noted above.

The arguments are not persuasive as to the rejection of claims 11-18. Applicant's arguments are not relevant to these claims. Applicant's first argument, that there is no OPA in Komine, has no relevance since these claims do not require an OPA. Applicant's second argument, that Komine is not an in-line system from beginning to end, is also irrelevant because the claims do not require this. With respect to the single beam line, these claims require only that the pump laser beam and the nonlinear crystal of the ring laser/OPO be on a single beam line. This is clearly the case in Komine. That the output of Komine's ring OPO may be orthogonal to the pump beam line is not relevant to these claims. Therefore the rejection of these claims is reiterated as above.

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*Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

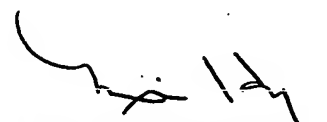
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.



JM  
May 24, 2005



MINSUN OH HARVEY  
PRIMARY EXAMINER